REMARKS

The Office action of 11 October 2007 (Paper No. 20071009) has been carefully considered.

Claims 1 thru 10 and 12 are being amended. Thus, claims 1 thru 10 and 12 thru 17 are pending in the application.

In paragraph 2 of the Office action, the Examiner rejected claims 1, 4, 6 and 9 under 35 U.S.C. §103 for alleged unpatentability over Shimbori, U.S. Patent No. 6,591,101 in view of Oshigiri, U.S. Patent Publication No. 2001/0014584, and further in view of Hofmann, U.S. Patent No. 6,418,372. In paragraph 3 of the Office action, the Examiner rejected claims 2, 3, 8, 12 and 13 under 35 U.S.C. §103 for alleged unpatentability over Shimbori '101 in view of Oshigiri '584, and further in view of Hofmann '372, Stephens, U.S. Patent No. 6,256,503 and Fitch *et al.*, U.S. Patent No. 6,424,840. In paragraph 4 of the Office action, the Examiner rejected claims 15 thru 17 under 35 U.S.C. §103 for alleged unpatentability over Shimbori '101 in view of Oshigiri '584, and further in view of Hofmann '372, Stephens '503 and Fitch *et al.* '840, and further in view of Karr *et al.*, U.S. Patent No. 6,952,181. In paragraph 5 of the Office action, the Examiner rejected claims 5 and 7 under 35 U.S.C. §103 for alleged unpatentability over Shimbori '101 in view of Oshigiri '584, and further in view of Hofmann '372 and Fitch *et al.* '840. In paragraph 6 of the Office action, the Examiner rejected claims 10 and 14 under 35 U.S.C. §103 for alleged unpatentability over Shimbori '101 in view of Garceran *et al.*, U.S. Patent No. 6,522,888, and further in view of Fitch *et al.* '840, Giniger *et al.*, U.S. Patent No. 6,199,045 and Hofmann '372. For the reasons stated below, it is submitted that the invention recited in the claims, as now amended, is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §103.

The present invention comprises a technique and system for providing information as to the location of a private wireless network. The present invention is able to more efficiently track the location as follows. For example, the base station controller confirms a registered location by dummy paging and updating location information stored in a visitor location register when the mobile station keeps an idle state for a certain time. Then, the location information in the register is updated using the confirmed location information. The location number includes a private base transceiver station number, a sector number, and a repeater number, where a service zone of a repeater is divided into a plurality of sector zones. The numbers form the foundation for determining the location of a mobile station as a unit of a repeater because a conventional public land mobile network (PLMN) tracks location as units of the base station controller. The dummy paging is similar to ordinary paging except that it is performed with regard to any mobile station that keeps up an idle state during a certain period so as to confirm whether the relevant mobile station is inside or outside the private wireless network. If the mobile station is inside the private wireless network, the pBTS number, sector number and repeater number correspond to the location of the mobile station, and location information of the mobile station keeping up the idle state can be managed in real time. The client may accommodate the display of the location of the mobile station on a screen. The mode wherein the client receives the location information from the server can be divided into a situation where the location registration of the mobile station is executed, where a message inquiring about the subscriber state is periodically transmitted to the server, and where a message inquiring about an appointed subscriber state is periodically transmitted to the server.

The primary reference relied upon by the Examiner remains Shimbori, U.S. Patent No. 6,591,101. A newly cited secondary reference is Hofmann, U.S. Patent No. 6,418,372

Shimbori '101 relates to a method of subscriber data control in a mobile communication network where subscriber data is transferred from a home mobile switching center to a destination mobile switching center. The subscriber data control method reduces the processing load on a mobile switching center and can effectively use the resource of a visitor subscriber data area. The subscriber data of the visitor mobile station is not deleted in response to a subscriber data deletion request from its home mobile switching center due to the fact that the visitor mobile station has further moved to another service area, and the state of the registered subscriber data of the visitor mobile station is set to an inactive holding state from the active state. Thereafter, in the case where the visitor mobile station returns to the subject service area within a predetermined period of time and again performs the location registration, restoration of the subscriber data of the visitor mobile station can be made by only changing the state of the subscriber data from the inactive state to the active state. With respect to the subscriber data being set to the inactive holding state, it is deleted if no location registration is made within a predetermined period of time.

Hofmann '372 relates to a low-cost guidance system for guiding a user to a selected one of multiple locations in a defined area. The system includes a portable device per user and multiple indicators. The portable device includes an infrared transceiver and an input to receive information corresponding to a selected location in the defined area. An indicator includes an indicator infrared transceiver, direction signs, and directional information corresponding to the relative direction in a path from the indicator to each of the locations. The portable device directly communicates the information corresponding to the selected location via the device infrared transceiver to the indicator infrared transceiver of the indicator to cause the indicator to access the directional information and activate the appropriate direction sign to guide the user toward the selected location. Thus, the low cost, easy-to-use system helps people find

their way around big public or private places including trade shows, warehouses, airports, libraries, museums, and shopping malls.

The remaining secondary references cited by the Examiner are Oshigiri, U.S. Patent Publication No. 2001/0014584, Stephens, U.S. Patent No. 6,256,503, Fitch *et al.*, U.S. Patent No. 6,424,840, Karr *et al.*, U.S. Patent No. 6,952,181, Garceran *et al.*, U.S. Patent No. 6,522,888 and Giniger *et al.*, U.S. Patent No. 6,199,045.

Oshigiri '584 relates to a wireless local loop access network system having a base station connected to a base station controller which is, in turn, connected to a public switched telephone network, and a memory for storing subscriber data which is readable by the base station controller. The memory stores an identifier to identify a subscriber in an interface protocol between the wireless loop access network and the public switched telephone network. Another identifier includes identification of a subscriber in a radio signal interface protocol in the loop access network. The memory also stores the data with regard to the correspondence between the two identifiers.

Stephens '503 discloses a technique for restricting communication based on the location of an originator and terminators within a network. The location of the originator is compared to that of each of the possible terminators. Based on the proximity of the location, one of the terminators is selected.

Fitch *et al.* '840 discloses a technique for dynamic location based zone assignment in a wireless system. The location of the mobile station relative to the number of network zones is used to accommodate the location process. A comparison can be made, for example, between two different operating zone definitions to accommodate the location.

Karr *et al.* '181 discloses a method and apparatus for locating a mobile station using a plurality of wireless networks and applications therefor. The systems output requested locations of hand sets or mobile stations (MS) based on, e.g., AMPS, NAMPS, CDMA or TDMA communication standards. The system determines both local MS locations, and more global MS location requests via, e.g., Internet communication. The system uses a plurality of mobile station locating technologies, including those based on, e.g., (1) two-way TOA and TDOA; (2) home base stations and (3) distributed antenna provisioning. The system is useful for 911 emergency calls, tracking, routing, people and animal location, including applications for confinement to and exclusion from certain areas. The system is particularly useful for estimating a location of an MS using information received from a commercial mobile radio service provider (CMRS) for which the MS is not registered for subscriber services.

Garceran *et al.* '888 relates to a technique for ascertaining coverage of a wireless communication system for a certain geographical area. The current location of a mobile station, identification of the mobile station, and measurement of the signal between the mobile station and a base station are determined and stored. The stored information is then processed to provide the radio frequency coverage database for the certain geographical area, and then the radio frequency parameters are modified for the identified mobile stations according to the radio frequency coverage database.

Giniger *et al.* '045 provides the location of a mobile station for a user by using, for example, global positioning satellites and a central site server. A wireless bidirection communication is set up between the mobile station and the central site server which accommodates the receiving of response information from the central site server and the enabling of contents to be provided to the mobile station upon initiation by the user.

The claimed invention is distinguishable from the cited prior art in the following respects.

Contrary to the assertion by the Examiner in paragraph 2 on page 2 of the Office action, Shimbori '101 does not specifically disclose a visitor location register as now recited in amended independent claims 1 thru 4, 6, 8 thru 10 and 12.

That is to say, column 2, lines 17-27 of Shimbori '101 does not mention or suggest a visitor location register as recited in the claims of the present application. The most that is mentioned in column 2, lines 17-27 of Shimbori '101 is the fact that, upon entering a service area A, the mobile station MS4 receives a location registration area number announced by the base station constituting the service area A and determines that the location registration area number is not identical to that stored in the self mobile station. Thus, whereas it is stated that the "self mobile station" has stored therein a number to which the location registration area number is compared, there is no mention or suggestion in the portion of Shimbori '101 cited by the Examiner of a visitor location register forming a part of a wireless network system, in which visitor location register location information relating to a wireless network location of a mobile station is stored, as recited in the claims of the present application.

Contrary to the assertion by the Examiner in paragraph 2 on page 2 of the Office action, Shimbori '101 does not disclose confirming a location of a mobile station and updating the location information stored in the visitor location register when the mobile station maintains an idle state for a certain period of time. Rather, in the portion cited by the Examiner (column 10, lines 23-42 and column 16, line 63-column 17, line 10 of Shimbori '101), Shimbori '101 only discloses setting a flag to "inactive" if no registration is received from a mobile unit within a certain period of time (specifically,

see column 10, lines 23-32 of Shimbori '101). Then, when the visitor mobile station returns to the "subject service area within a predetermined period of time and again performs the location registration, restoration of the subscriber data of the visitor mobile station can be made **by only changing the state of the subscriber data from the inactive state to the active state**" (emphasis supplied -- *see* column 17, lines 4-10 of Shimbori '101).

In other words, in Shimbori '101, location information is updated only when the mobile station returns to the "active" state whereas, in contrast, in the invention, location information is updated when the mobile station **keeps up** an idle state for a certain period of time.

Furthermore, contrary to the assertion by the Examiner on page 3 of the Office action, Hofmann '372 does not teach confirming a location of a mobile station by dummy paging. In fact, "dummy paging" is not disclosed per se. That is, whereas Hofmann '372 discloses an electronic visitor guidance system, "dummy paging" is not mentioned. Moreover, the portions of the patent cited by the Examiner (Figure 5 and column 7, lines 50-53) do not disclose or mention "dummy paging". Rather, Figure 5 merely relates to two-way communication of a portable device, and column 7, lines 50-53 merely states that, if a request for location data is addressed to a portable device, that device transmits a location code and then returns to a "sleep" mode.

In addition, contrary to the assertion by the Examiner in paragraph 3 on pages 3 and 4 of the Office action, Shimbori '101 does not disclose or mention, in its Abstract, the use of at least one repeater (or any repeaters) installed in sector zones of a private base transceiver station (or in any part of the system disclosed in Shimbori '101).

On page 4 of the Office action, the Examiner admits that Shimbori '101 does not disclose a visitor location register in which location information relating to a private wireless network location of a mobile station is stored. However, the Examiner cites Oshigiri '584 as allegedly teaching a private base station controller storing location information relating to a private wireless network location of a mobile station in a visitor location register when the mobile station registers its location with the private wireless network, the Examiner citing paragraph [0027] and claim 15, step c of Oshigiri '584. However, the portions of Oshigiri '584 cited by the Examiner do not disclose or suggest a visitor location register forming a part of a wireless network system as recited in the claims of this application.

At the bottom of page 4 of the Office action, the Examiner admits that Shimbori '101 and Oshigiri '584 do not disclose confirming a location of a mobile station by dummy paging. However, the Examiner again cites Hofmann '372 as allegedly teaching the confirming of a location of a mobile station by dummy paging, the Examiner citing Figure 5 and column 7, lines 50-53 of Hofmann '372. In that regard, contrary to the assertion by the Examiner, Hofmann '372 does not teach confirming a location of a mobile station by dummy paging.

In fact, "dummy paging" is not disclosed per se. That is, whereas Hofmann '372 discloses an electronic visitor guidance system, "dummy paging" is not mentioned. Moreover, the portions of the patent cited by the Examiner (Figure 5 and column 7, lines 50-53) do not disclose or mention "dummy paging". Rather, Figure 5 merely relates to two-way communication of a portable device, and column 7, lines 50-53 merely states that, if a request for location data is addressed to a portable device, that device transmits a location code and then returns to a "sleep" mode.

On page 5 of the Office action, the Examiner admits that "[t]he combination of Shimbori, Oshigiri and Hofmann does not specifically disclose a server inquiring about the location information of the mobile station stored in said visitor location register" (quoting from page 5, lines 3-5 of the Office action). However, at page 5, lines 6-7 of the Office action, the Examiner alleges that Stephens '503 "teaches a server inquiring about the location information of the mobile station stored in said visitor location register (see column 13, lines 40-48)" (quoting from page 5, lines 6-7 of the Office action). On the contrary, Stephens '503 does not disclose a server performing that function. Rather a home location register (HLR) 246 is said to be "responsible for providing the subscription information, for querying service machine 248 for instructions, and for requesting that VLR 250 in association with MSC-S 252 provide the geographic location of the mobile cellular telephone" (quoting from column 13, lines 40-44 of Stephens '503).

On page 5 of the Office action, the Examiner also admits that "[t]he combination of Shimbori, Oshigiri, Hofmann and Stephens does not specifically disclose a location information including at least one of a private base transceiver station number, a sector number and a repeater number" (quoting from page 5, lines 13-15 of the Office action). However, the Examiner cites Fitch *et al.* '840 as allegedly teaching that the location number includes one of the three items mentioned in the claims. In that regard, Fitch *et al.* '840 does not disclose location information which includes a base transceiver station number or a repeater number. Only a sector number is disclosed as being included in location information, but that item (sector number) is no longer being claimed.

Contrary to the assertion by the Examiner at page 6, lines 1-6 of the Office action, Oshigiri '584 does not disclose transmission to a client of location information received from a private base station controller. Rather, Oshigiri '584 only teaches (in paragraph

[0027]) transmission of registration information **to** a base station controller followed by storage thereof by the base station controller.

At page 6, lines 11-16 of the Office action, with respect to the rejection of claims 15 thru 17, the Examiner admits that "[t]he combination of Shimbori, Oshigiri, Hofmann, Stephens and Fitch does not specifically disclose the server being connected to said base station controller through a local area network and the plurality of repeaters being connected to the private base transceiver station, with the private base transceiver station being connected to said private base station controller" (quoting from page 6, lines 12-16 of the Office action). The Examiner then cites Karr *et al.* '181 (Figures 2-4, 6 and 13 thereof) as allegedly disclosing such an arrangement. However, none of the cited figures of Karr *et al.* '181 discloses or suggests the combination of a server, a local area network (LAN), a base station controller (BSC) and a private base transceiver station (BTS) as claimed in the present application.

In paragraph 5 on page 7 of the Office action, with respect to the rejection of claims 5 and 7, the Examiner alleges that "the combination of Shimbori, Oshigiri and Hofmann teaches claims 4 and 6" (quoting from page 7, lines 8-9 of the Office action). However, this argument has been refuted above, and the Examiner is respectfully referred to the arguments set forth above.

In paragraph 6 on pages 7-10 of the Office action, the Examiner discusses the rejection of claims 10 and 14, and repeats many of the arguments set forth earlier in the Office action with respect to the other claims. These arguments have been discussed and opposed above, and the counter-arguments set forth above are hereby incorporated by reference thereto.

In addition, contrary to the assertion by the Examiner at page 8, lines 12-13 of the Office action, Garceran *et al.* '888 does not disclose periodic transmission to a server of a message requesting an inquiry about a mobile station subscriber's **state**. Rather, the cited portion of Garceran *et al.* '888 (column 3, lines 34-37) only discloses a server requesting, receiving and determining a unit's **position**.

On page 9 of the Office action, the Examiner admits that "[t]he combination of Shimbori, Garceran and Fitch does not specifically disclose requesting a private base station controller to inquire out location information stored in a visitor location register in response to the inquiry message, transmitting location information stored in a visitor location register to a server in response to the server's request" (quoting from page 9, lines 6-10 of the Office action). However, the Examiner cites Giniger *et al.* '045 as allegedly teaching the requesting of a private base station controller to inquire out location information stored in a visitor location register, the Examiner citing column 11, lines 59-61 and column 12, lines 32-38 of Giniger *et al.* '045. The Examiner then states that "the teaching of Giniger **inherently** teaches 'a visitor location register' since the mobile unit 103 can roam from one network to another network and each network inherently includes 'a visitor location register'" (emphasis supplied -- quoting from page 9, lines 14-16 of the Office action).

However, at no point in the portions of Giniger *et al.* '045 is there any mention whatsoever of a visitor location register as recited in each of the independent claims. Therefore, it is highly doubtful that one can reasonably conclude that Giniger *et al.* '045 "inherently" discloses a visitor location register. It is respectfully submitted that the only reason that the Examiner sees such an inherency is that the Examiner, unlike one of ordinary skill in the art as of the date of the invention, has had the benefit of reviewing the disclosure of the present application, and has therefore "read into" the disclosure of

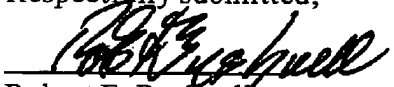
Giniger *et al.* '045 the existence of a visitor location register. This is not a proper basis for a rejection under 35 U.S.C. §102 or §103.

On page 10 of the Office action, the Examiner again admits that the "combination of Shimbori, Garceran, Fitch and Giniger does not specifically disclose confirming a location of the mobile station by dummy paging" (quoting from page 10, lines 4-5 of the Office action), but the Examiner again cites Hofmann '372 as allegedly teaching the confirming of a location of the mobile station by dummy paging, the Examiner citing Figure 5 and column 7, lines 50-53 of Hofmann '372. However, as stated above, it is clear that Hofmann '372 does not disclose or suggest the confirming of a location of the mobile station by dummy paging since "dummy paging' is not even mentioned at any point in the cited portion of the disclosure of Hofmann '372.

In view of the above, it is submitted that the claims of this application are in condition for allowance, and early issuance thereof is solicited. Should any questions remain unresolved, the Examiner is requested to telephone Applicant's attorney.

No fee is incurred by this Amendment.

Respectfully submitted,



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